

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF SOUTH DAKOTA**

**IN THE MATTER OF THE
APPLICATION BY DEUEL HARVEST
WIND ENERGY LLC FOR A PERMIT
OF A WIND ENERGY FACILITY AND
A 345-kV TRANSMISSION LINE IN
DEUEL COUNTY**

*
*
*
*
*
*
*
*
*

**TESTIMONY OF INTERVENOR
CHRISTINA KILBY**

EL18-053

I am very concerned about impacts from nearby wind turbines negatively affecting my family’s enjoyment of property located in the west half of section 32 Glenwood township. My parents purchased the property in 1989. I spent time out there while growing up, pulling weeds, picking rock and planting trees. I knew then it was unique. But as I have gotten older, I realize even more how unique the property is, and how it should be protected.

Over the years, this property has continued to be a place for our family to be together, whether it’s planting trees, shed hunting, riding around and getting quizzed on tree types, or just hiking. I now know why my parents bought the farms years ago. It is a beautiful retreat. My dad has spent years investing time, money and hard work on the property to make it even more enjoyable both for animals and people. I believe it is his favorite place on earth.

I have three kids, a 17 year old son, a 16 year old daughter, and a nine year old daughter. My husband, kids and I go to property several times a year. I know they love the farm and the experiences and memories made there. We often gather at the farm with my parents, brother and his family, and my sister and her family, and all our campers. This property has allowed my kids to experience beautiful nature in rural South Dakota. We live in a Twin Cities suburb, and I often crave the peaceful open spaces that I was able to enjoy growing up and I want my kids to be able to continue experiencing that as well. I am bothered by the sight and sound of wind turbines. The multiple turbines proposed by our property will take away the quiet enjoyment we experience now. It will defeat all of the time, money and work invested in the property to make it an enjoyable retreat. I think there was a reasonable expectation that all the time, work and money our family invested would not be lost to industrial wind turbines being

You have the right to swing your fist only to the point that it hits someone else’s nose. The problem with the Deuel Harvest project is that in many cases the effects of the turbines are not being kept on the participating property. The project as proposed poses a significant risk of nuisance to adjoining land owners from noise, vibration, shadow flicker and infrasound. I think people’s right to the quiet enjoyment of their property should be protected. I think the SD PUC

should protect the adjoining landowners from these effects, effects that in any other situation would not be legal to inflict on neighbors.

I do not believe it is nor should be the intervenors' burden to prove that this facility as proposed will result in harms. The burden is on Deuel Harvest to show that they can meet the burden of SDCL

I believe all of the issues, concerns and objections to this project that I am aware of could be solved with respectful setbacks. Deuel Harvest wants to put turbines too close to people who don't want turbines interfering with the safe use and enjoyment of their property. Some people who do not mind having these nuisances or trespasses on their property can negotiate with Deuel Harvest. But I do not see the need or the right for Deuel Harvest to be able to force these effects on unwilling landowners.

What are the alternate sites Deuel Harvest considered for these wind projects? I know there are places around the country with much less population than even Deuel County. I have driven through western South Dakota, where you can drive for miles and miles without seeing any home. There are other places for these projects to be built.

If people want to bring development into the area, wind turbines are not the way to do it. I believe more and more people are seeking out quiet places to live. Technology is allowing more and more people to be able to work remotely and they are therefore free to live anywhere they want. Common sense says people given a choice will not choose to live in an area covered by industrial wind turbines. I think if given the opportunity, many people will even move out of a community that is covered in turbines. This is already happening in Deuel County.

According to Exhibit 1 of Mr. Marous's Direct Testimony, Mr. Lawrence included in his surrebuttal for Prevailing Winds, that "Sellers desired their privacy and would only allow an interview with NPA. Seller stated when they sold the house, they couldn't get the listing price of \$339,000, the price was lowered and sold it for what they could. They also owned the adjoining land around the home. The buyer did not want any wind towers near the house and therefore had a condition of sale not to sign a wind lease. Seller stated it was difficult to find a buyer, but they were satisfied with the purchase price. Seller stated you could feel the vibrations in the air and towers create issues with the body. They are glad they do not live around wind towers." This is not surprising, is really common sense, and as more people become aware of the effects of living near turbines, property values will, I believe will affect property values even more. I believe other owners commented also about being annoyed by the noise of the turbines in Mr. Lawrence's report.

In addition, I think the Lawrence report is not applicable to Deuel County Brookings cannot be compared to Deuel County for purposes of claiming no reduction in property values. Brookings has a university, more commerce, business and job opportunities than Deuel County. I think there is more of a demand for homes around Brookings for people who *need* to live and

work in the area. However, there are numerous counties around the state with similar opportunities to those offered in Deuel County. If given a choice between buying a home in a quiet rural area, or one covered with 500' wind turbines, I think the majority of people would not choose to live near wind turbines.

A property value guarantee is a good option, put the risk on Invenenergy. If there is no affect on property value, it should not even have to come into play. I believe Invenenergy has used a property value guarantee in other places.

Economic benefits of the project are exaggerated. Many payments to landowners will go to non-resident landowners. And even much of the payments made to resident landowners will not be spent in Deuel County. As someone stated at the Public input hearing, people don't shop in Clear Lake, they go to Watertown, Sioux Falls, the Cities. That won't change. Without evidence of these assumptions the report is not reliable.

There has been no evidence presented proving wind turbines do not cause harm to animals and people. According to the Massachusetts Study, "Evidence regarding wind turbine noise and human health is limited." ES-9 Deuel Harvest has the burden in this process to establish that:

- (1) The proposed facility will comply with all applicable laws and rules;
- (2) The facility will not pose a threat of serious injury to the environment nor to the social and economic condition of inhabitants or expected inhabitants in the siting area;
- (3) The facility will not substantially impair the health, safety or welfare of the inhabitants; and
- (4) The facility will not unduly interfere with the orderly development of the region with due consideration having been given the views of governing bodies of affected local units of government.

I believe in addition to any physical affects from the unique sound of wind turbines, or physical effects or symptoms from infrasound, continued annoyance will result in negative health effects, possibly from stress or sleep problems. In fact, the article Wind Turbine Noise and Sleep: Pilot Studies on the Influence of Noise Characteristics, Ageborg Morsing, et. al., states: "The impact of noise on sleep was measured using polysomnography and questionnaires. During nights with wind turbine noise there was more frequent awakening, less deep sleep, less continuous N2 sleep and increased subjective disturbance compared to control nights." (Ex. K-1)

According to Health effects related to wind turbine syndrome, Fritz van den Berg and Irene van Kamp: "Effects such as dizziness and nausea, or motion sickness, can be an effect of infrasound..." Ex. A12-4 p 21 "[T]he symptoms associated with WTS (wind turbine syndrome) are comparable to those found in relation to other stressors." Id. "The rhythmic character of wind turbine sound is caused by a succession of sound pulses produced by blade rotations. From earlier research it was concluded that this may lead to structural vibrations of a

house and wind turbines thus may be perceived indirectly inside a house and hence lead to annoyance. This possibility needs further investigation.” Id.

“Long lasting annoyance can lead to health complaints.” Ex. A12-4 p1) “Residential sound levels from wind turbines are lower than those from comparable sources, such as traffic or industry, but are experienced as more annoying. This is possibly caused by the typical swishing or rhythmic character of the sound. Perhaps the low frequency component of wind turbine sound also leads to extra annoyance, as is the case with other sources.” Id.

“But even at long distances one can sometimes hear a rhythmic variation that can develop into a distinct beating.” Ex a12-4 p3) “This will typically occur when there is high wind shear, i.e. the wind speed increases substantially with height. Certainly at night there can be a firm wind at rotor height even though there may be almost no wind at ground level. It can also occur when part of the rotor is in the wind shadow of a ridge or another turbine. A regular variation can explain a rhythmic beating. This is most often heard in evening, night time and early morning and when there is low cloud cover, which implies a stable atmosphere and high wind shear.” Id.

There has been no evidence presented that proves wind turbines do not cause harm to animals and people. I believe there is sufficient evidence for concern regarding the negative impacts to people from living in close proximity to turbines. Further, just saying something has not been proven is not the same as proving it is not true. There has been much debate about this issue. Several studies that have been done conclude that more research needs to be done. But until it can be unequivocally determined that turbines pose no significant risk to people, this project should be sited in a way to guarantee protection to people.

I believe there is some evidence supporting that people can perceive infrasound and be extremely bothered by it. I think setbacks should be required that prevent this. According to Mr. Hessler’s combined report, A Cooperative Measurement Survey and Analysis of Low Frequency and Infrasound at the Shirley Wind Farm in Brown County, WI, issued Dec. 24, 2012, “At the other two residences, located approximately 3,300 and 7,100 ft from the nearest turbine, respectively, high levels of infrasound were detected indoors...” These residents report being intensely affected despite inaudibility and to be aware of turbine operation when the turbines are not visible. (Ex K 2) In a recent study, Altered cortical and subcortical connectivity due to infrasound administered near the hearing threshold – Evidence from fMRI, by Weichenberger et al., published April 12, 2017, results show infrasound does have an effect on the brain. (Ex K 3)

According to Health effects related to wind turbine syndrome, Fritz van den Berg and Irene van Kamp: “Effects such as dizziness and nausea, or motion sickness, can be an effect of infrasound...” Ex. A12-4 p 21 “[T]he symptoms associated with WTS (wind turbine syndrome) are comparable to those found in relation to other stressors.” Id. “The rhythmic character of wind turbine sound is caused by a succession of sound pulses produced by blade

rotations. From earlier research it was concluded that this may lead to structural vibrations of a house and wind turbines thus may be perceived indirectly inside a house and hence lead to annoyance. This possibility needs further investigation.” Id.

“Long lasting annoyance can lead to health complaints.” Ex. A12-4 p1) “Residential sound levels from wind turbines are lower than those from comparable sources, such as traffic or industry, but are experienced as more annoying. This is possibly caused by the typical swishing or rhythmic character of the sound. Perhaps the low frequency component of wind turbine sound also leads to extra annoyance, as is the case with other sources.” Id. “in line with the World Health Organization’s (WHO) definition of health “as a state of complete physical, mental, and social wellbeing and not merely the absence of disease or infirmity”, noise annoyance and sleep disturbance are considered health effects.” (Ex A12-4 p7)

“But even at long distances one can sometimes hear a rhythmic variation that can develop into a distinct beating.” (Ex a12-4 p3) “This will typically occur when there is high wind shear, i.e. the wind speed increases substantially with height. Certainly at night there can be a firm wind at rotor height even though there may be almost no wind at ground level It can also occur when part of the rotor is in the wind shadow of a ridge or another turbine. A regular variation can explain a rhythmic beating. This is most often heard in evening, night time and early morning and when there is low cloud cover, which implies a stable atmosphere and high wind shear.” Id.

According to the Wind Turbine Health Impact Study: Report of Independent Expert Panel, January 2012”

“The Panel recommends an ongoing program of monitoring and evaluating the sound produced by wind turbines that are installed in the Commonwealth. IEC 61400-11 provides the standard for making noise measurements of wind turbines (International Electrotechnical Commission, 2002). In general, more comprehensive assessment of wind turbine noise in populated areas is recommended. These assessments should be done with reference to the broader ongoing research in wind turbine noise production and its effects, which is taking place internationally. Such assessments would be useful for refining siting guidelines and for developing best practices of a higher category. Closer investigation near homes where outdoor measurements show A and C weighting differences of greater than 15 dB is recommended.” (Ex. A11-4 ES-11)

I adamantly disagree with Mr. Hessler’s recommendation of a 45dBA noise limit. First, I believe Deuel County deserves the same protection from noise as the community around Prevailing Winds. There is no reason people in Deuel County should have to suffer more simply because Mr. Hessler has not heard complaints or opposition. This is about trying to prevent a negative affect to the quality of life of those in the project. I believe Mr. Hessler knows the issues that a noise limit of 45dBA can cause. Some people in the county do not. In addition,

why would Mr. Hessler change his previous recommendation as to noise limit out of concern for it causing an inconvenience or loss of profits to Deuel Harvest? I think the focus should be on protecting the non-participating landowners who have had no say in how this project will change their lives.

It appears the panel did not have enough information on infrasound and low frequency noise to make any conclusion regarding The panel has shown that more research is needed: “It is difficult to find reliable and comparable infrasound and low frequency noise (ILFN) measurement data in the peer-reviewed literature.” (Id at 11)

According to Wind Turbine Health Impact Study, Ex. A12-4 p5, “Vibrations from wind turbines can lead to ground vibrations...” Portions of the project are in the county aquifer protection overlay district. I am concerned these vibrations will pollute the aquifer which the county has determined needs to be protected.

The court in Williams v. Invenergy found evidence that Invenergy had lied to landowners complaining of noise violations and then manipulated sound testing. Regarding Jacob Baker’s testimony submitted addressing ice throw and the claim that staff could not verify the ice throw or damage caused, there is absolutely no motivation for Invenergy or any of its staff to honestly report this information. Just as there is no motivation for Deuel Harvest staff, or staff from any wind energy facility, to accurately report bird and bat carcasses.

I believe a permit to Deuel Harvest should be denied because the Deuel County special exception permits granted to Deuel Harvest have been declared invalid. Deuel Harvest’s Application to the South Dakota Public Utilities Commission for Energy Facility Permits (the “Application”) contains significant errors and deficiencies. And Deuel Harvest’s past operations show a lack of compliance with applicable laws and rules, manipulation of data and as well as a disregard for the welfare of the inhabitants of siting areas.

I hereby incorporate BRIEF IN SUPPORT OF INTERVENOR CHRISTINA KILBY’S MOTION TO DENY AND DISMISS DEUEL HARVEST WIND’S APPLICATION, Affidavit of Christina Kilby and all attachments into my testimony.

I am concerned about Deuel Harvest’s role in extensive conflicts of interest at the county level. I think it will be very difficult for anyone opposed to the project to be heard at an impartial hearing for a special exception permit for the project. Deuel Harvest knew board members had conflicts of interest as acknowledged in their contracts. But instead of requiring recusal or public disclosure, Invenergy released the county officials just prior to their voting on issues favorable to Invenergy.

In addition, the State’s Attorney, John Knight, who has advised both the county commissioners and BOA in decisions affecting the project, represented two clients in their contracts with Deuel Harvest. Those clients, Darold Hunt and Gregory Toben are receiving 25%

of the turbines according to the proposed layout submitted with the application. I believe this is a conflict of interest and violation of due process rights. There is no indication that the State's Attorney will not continue to advise the board in the next permit hearing for Deuel Harvest.

Deuel Harvest has misrepresentations and inconsistencies in its application regarding setbacks, stating two mile setback from Lake Alice and a one mile setback from Lake Alice, but the proposed payout violates both. The county ordinance requires two miles from "Lake Alice." Prior to becoming effective, the ordinance amendment was read publicly. Any opposition to the wording would have been brought at that time. The ordinance is clearly written and Deuel Harvest cannot interpret the ordinance differently.

These errors, inconsistencies, violations and misrepresentations also violate due process rights, as discussed in my brief in support of my motion to deny. It is fundamentally unfair that intervenors are required to have testimony submitted by March 14, 2019, yet the applicant can continue to make adjustments or agree to conditions through the evidentiary hearing. It is already near impossible for average landowners and intervenors to accomplish all that is required to oppose the project. Intervenors will not have adequate time, if any opportunity at all to respond to later adjustments or conditions, This includes responding to data requests, requesting data, providing testimony, reading the application and all testimony of the applicant and applicant's witnesses.

I am concerned about Deuel Harvest's witnesses being biased toward the project because they routinely provide testimony for wind energy development and are in the business of doing so. It is in their best interest to testify in a manner favorable to Deuel Harvest and they have a financial interest in doing so.

I am unable to address everything that concerns me regarding this project. There are many articles and studies I feel are extremely relevant to ensuring the projected is sited as safely as possible but I am unable to submit them at this time due to time constraints.

Dated: March 14, 2019

/S/ Christina Kilby

Intervenor

112 Geneva Blvd.

Burnsville, MN 55306

christinakilby@yahoo.com